Laboratory	**Shriram Institute for Industrial Research, 19, University Road, Delhi**			
Accreditation Standard	**ISO/IEC 17025: 2005**			
Certificate Number	**CC-2627** ***(in lieu of C-0039 & C-0275)***	**Page**	**1 of 7**	
Validity	**01.04.2018 to 31.03.2020**	**Last Amended on**	**13.04.2018**	

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	MECHANICAL CALIBRATION			
I.	**MASS**			
1.	Weights[$] (1 mg to 200 g) Class E_2 accuracy and coarser	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g	0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.004 mg 0.005 mg 0.006 mg 0.008 mg 0.010 mg 0.012 mg 0.016 mg 0.020 mg 0.025 mg 0.03 mg 0.05 mg 0.10 mg	Using Standard Weights (E_1, E_2 & F_2 Class) & Precision Balances by Substitution Method of Weighing and ABBA/ABA Weighing Cycle based on OIML R 111-1 (2004)
2.	Weights[$] (>200 g to 2 kg) Class F_1 accuracy and coarser	500 g 1 kg 2 kg	0.25 mg 1.39 mg 1.39 mg	Using Standard Weights (E_2 Class) & Precision Balances by Substitution Method of Weighing and ABBA/ABA Weighing Cycle based on OIML R 111-1 (2004)
3.	Weights[$] (>2 kg to 20 kg) Class M_1 accuracy and coarser	5 kg 10 kg 20 kg	0.20 g 0.25 g 0.32 g	Using Standard Weights (F_2 Class) & Precision Balances by Substitution Method of Weighing and ABBA/ABA Weighing Cycle based on OIML R 111-1 (2004)

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
II.	**WEIGHING SCALE AND BALANCE**			
1.	Balance/ Weighing Machine[#] Class I and coarser	Upto 20 g d = 0.001 mg and coarser	0.01 mg	Using Standard Weights of E_1, E_2 & F_2 Class As per OIML R 76-1 (2006)
		Upto 200 g d = 0.01 mg and coarser	0.03 mg	
		Upto 500 g d = 0.1 mg and coarser	0.3 mg	
		Upto 3 kg d = 0.1 mg and coarser	1.6 mg	
		Upto 8 kg d = 100 mg and coarser	200 mg	
	Balance/ Weighing Machine[#] Class II and coarser	Upto 50 kg d = 100 mg and coarser	250 mg	
III.	**VOLUME**			
1.	Micropipette[$]	10 µl to 100 µl	0.3 µl	Using Standard Weights and Precision Balance by Gravimetric Method based on ISO 8655
		100 µl to 5000 µl	5 µl	
2.	Flask, Cylinder, Pipette, Burette, Jar, Receiver, Tube, Beaker, Dispenser, Bottle, Column, Cup, Pyknometer[$]	0.1 ml to 1000 ml	0.002 ml to 0.23 ml	Using Standard Weights and Precision Balance by Gravimetric Method based on ISO 4787

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
3.	Butyrometer[$]	0 % to 100 %	0.023 % to 0.4 %	Using Standard Weights and Precision Balance by Gravimetric Method based on ISO 488
IV.	**DENSITY AND VISCOSITY**			
1.	Density of Liquid Hydrometer (Density, Specific Gravity, Baume, Brix, Lactometer & Alcoholmeter) [$]	0.650 g/cm^3 to 1.800 g/cm^3	0.0008 g/cm^3	Using Reference Hydrometers. Procedure based on IS 3104 (Part I & Part II)
2.	Capillary Viscometers[$] (Viscometer Constant)	0.002 mm^2/s^2 to 18 mm^2/s^2	0.7 %	Using Reference Viscometers, Newtonian Liquids, Stop watch and Constant Temperature Bath by Comparison Method based on ASTM D445, ASTM D446 & ASTM D2162
V.	**DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)**			
1.	Vernier Caliper[$] L.C.: 0.01 mm	0 mm to 600 mm	13.40 µm	Using Gauges Blocks & Caliper Checker by Comparison calibration based on IS 3651
2.	Micrometer[$] L.C.: 0.001 mm	Upto 150 mm	2.20 µm	Using Gauges Blocks by Comparison calibration based on IS 2967
3.	Plunger Dial Gauge/ Digital Gauge[$] L.C.: 0.001 mm L.C.: 0.01 mm	 Upto 30 mm Upto 100 mm	 2.0 µm 12.0 µm	Using Gauges Blocks and Comparator Stand by Comparison calibration based on IS 2092

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
4.	Test Sieves[$]	32 µm to 4 mm	9.0 µm	Using Profile Projector. Measurement based on IS 460
		>4 mm to 125 mm	33.0 µm	Using Vernier Caliper Measurement based on IS 460
5.	Feeler Gauge[$]	Upto 1 mm	3.10 µm	Using External Micrometer Measurement based on IS 3179
6.	Height Gauge[$] L.C.: 0.01 mm	Upto 600 mm	12.0 µm	Using Gauges Blocks, Caliper Checker and Surface Plate by Comparison calibration based on IS 2921
VI.	**ACOUSTIC**			
1.	Sound Level Meter[$] L.C.: 0.1 dB	94 dB & 114 dB at frequency of about 1 kHz	0.3 dB	Using Sound Level Calibrator
VII.	**ACCELERATION AND SPEED**			
1.	Tachometer[$] (Non - Contact Type) L.C.: 1 rpm	200 rpm to 15000 rpm	0.6 % rdg.	Using Tachometer and DC-Electric Motor
2.	Centrifuge, Rotor, Vibration Machine and Abrasion Machine[♣]	200 rpm to 15000 rpm	0.8 % rdg.	Using Tachometer

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
VIII.	**PRESSURE INDICATING DEVICES**			
1.	Pressure-Hydraulic[$] (Dial/ Digital Pressure Gauges)	3.2 bar to 700 bar	0.22 % rdg.	Using Dead Weight Tester by Comparison Method based on DKD-R 6-1
2.	Pressure-Pneumatic[$] (Dial/ Digital Pressure Gauges)	0 bar to 20 bar	0.20 % rdg.	Using Digital Pressure Calibrator by Comparison Method based on DKD-R 6-1
3.	Pressure-Pneumatic[$] (Dial/ Digital Vacuum Gauges)	-0.95 bar to 0 bar	1.00 % rdg.	Using Digital Pressure Calibrator by Comparison Method based on DKD-R 6-2

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	THERMAL CALIBRATION			
I.	**TEMPERATURE**			
1.	Glass Thermometers[$]	(-) 45 °C to 300 °C	0.07 °C	Using PRT with Digital Thermometer, Low Temperature Bath & Oil Bath by Comparison Calibration
2.	RTD/Thermocouple Sensors, Dial & Digital Thermometers[$]	(-) 45 °C to 300 °C >300 °C to 1000 °C	0.07 °C 1.6 °C	Using PRT with Digital Thermometer, 'R' Type T/C with Indicator, DMM, Low Temperature Bath, Oil Bath & Furnace by Comparison Calibration
3.	Digital/ Dial Indicators/ Controllers with Sensor (RTD/ Thermocouple) as fitted in Thermal Equipments (Furnace, Bath, Oven, Chamber, Refrigerator, Autoclave, Dissolution Apparatus, Chiller, Incubator, Low Temperature Brittleness Tester, Thermal Stability Apparatus, Freeze & Thaw Unit, Refrigerated Centrifuge, Cold	(-) 75 °C to 300 °C >300 °C to 1200 °C	0.12 °C 1.7 °C	Using PRT with Digital Thermometer, 'R' Type T/C with Indicator & DMM. Single Position Comparison Calibration

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	Room, Digi Wash Apparatus, Oxygen Index Machine, Freezer, Melt Flow Index Apparatus, Hot Plate, Heating Block, Heating Mantle, Cabinet, Refractometer, Flash Point Apparatus)♣			

*** Measurement Capability is expressed as an uncertainty (±) at a confidence probability of 95%**
$ Only in Permanent Laboratory
♣ Only for Site Calibration
 # The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

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